INDIANA UNIVERSITY

University Graduate School
2009-2010
Academic Bulletin

Mathematical Physics

College of Arts and Sciences
Bloomington

Interdepartmental Graduate Committee on Mathematical Physics
(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

Chairperson
Professor Mike Berger* (Physics)

Professors
John Challifour* (Emeritus; Mathematics, Physics), Herbert Fertig* (Physics), Robert Glassey* (Mathematics), David Hoff* (Mathematics), Michael Jolly* (Mathematics), Paul Kirk* (Mathematics), V. Alan Kostelecky* (Physics), Andrew Lenard* (Emeritus; Mathematics, Physics), Roger Newton* (Emeritus, Physics), Gerardo Ortiz* (Physics), Brian Serot* (Physics), Peter Sternberg* (Mathematics), Vladimir Touraev* (Mathematics), Kevin Zumbrun* (Mathematics)

Academic Advisor
Professor Mike Berger*, Swain Hall West 117, (812) 855-2609

Degree Offered

Doctor of Philosophy
This program offers advanced graduate training for superior students in the overlapping areas of mathematics, theoretical physics, and their applications from a unified point of view and promotes research in this field.

General supervision of the program is controlled by the Interdepartmental Graduate Committee on Mathematical Physics. While no master's degree is offered, a student may qualify for a master's degree in mathematics or physics during the course of study. A student usually enters the program at the beginning of the second year of graduate study in mathematics or physics.

Special Program Requirements
(See also general University Graduate School requirements.)

University Graduate School
Kirkwood Hall 111
Indiana University
Bloomington, IN 47405
(812) 855-8853
Contact: grdschl@indiana.edu

Doctor of Philosophy Degree

Admission Requirements
Students in the Mathematical Physics Program must be enrolled in either the Department of Mathematics or the Department of Physics. Basic preparation should include courses in advanced calculus, linear algebra, modern algebra, complex variables, classical mechanics, electromagnetism, quantum mechanics, modern physics, thermodynamics, and statistical mechanics. Knowledge of the following fields is desirable: real analysis, differential equations, probability, topology, differential geometry, and functional analysis.

Course Requirements
A total of 90 credit hours, including dissertation. Required courses are determined by the advisory committee on the basis of the student's previous training and main fields of interest. (For a starting point, see requirements for Mathematical Physics minor.)

Advisory Committee
Composed of members of both the Department of Mathematics and the Department of Physics.

Minors
Mathematics and physics.

Foreign Language/Research-Skill Requirement
Same as in the department of residence.

Qualifying Examination
Consists of parts of the Departments of Mathematics and Physics qualifying examinations, as determined by the student's advisory committee.

Final Examination
Oral and public defense of dissertation.

Courses

See listings of the Departments of Mathematics and Physics.